

Rage Hurricane & Hurricane 'R' Maintenance Guide

Congratulation on purchasing your Rage Specialist all-terrain vehicle.

We recommend that you garage your vehicle for any sustained period to protect it from weather and the elements. Servicing is always recommended to be carried out by a specialist for this type of vehicle, however, if you have difficulty in finding a suitable provider of services then please contact us as we are happy to carry out the work or find a local garage to carry out the work for you.



R140RT – Road legal



**R140T in off-road set up
With and without Off-road body**



Due to the nature of the Rage product it has been a highly customised vehicle with many different customer options.

This document, where possible, covers most options for the Hurricane (R140T) and Hurricane 'R' (R140RT) models. If you require assistance with any aspect of your vehicle or its optional extras, then please contact Rage Motorsport customer support.



Guidelines for Safe Operation of Off Road Buggies

- Drivers must wear a safety helmet and eye protection
- A full briefing on the controls and safe operation of the buggy must be given to all drivers
- Drivers must be able to reach and operate all controls competently
- Drivers must operate the buggy with responsibility, and must not endanger the safety of others
- Seat belts must be fitted correctly and worn at all times when driving the buggy
- Spectators must remain a safe distance away from where the buggy is being operated
- Tyres must be suited to the ground conditions
- Do not touch any component parts behind the firewall immediately after use, as some may be hot
- Fuel must be stored away from the area of operation
- Re fuelling must not be carried out immediately after use, the engine should be allowed to cool for ten minutes before refuelling. Always use a suitable funnel for re fuelling to avoid spillage



General Driving Guidelines

- Always wear a crash helmet
- Do not over rev a cold engine
- Ensure the vehicle is stationery when changing between forward and reverse
- Always wear the safety harness



Rage Hurricane & Hurricane 'R' Breaking in Period

When your vehicle leaves the factory, every effort is made to ensure that all nuts, bolts clips and callipers have been torqued to the correct level. Due to the nature of the uses of our off-road and track vehicles, we recommend that the following critical parts receive special attention to ensure the safety of the driver, passenger and the vehicle.

The Yamaha Nytro engines are fitted from new from the snowmobile therefore it is important to follow the running in guidelines specified in the Yamaha manual.

After the first 10 minutes of use, check the following:

Torque the wheel nuts to:
(10mm Stud @ 70Nm / 51 ft lbf)
(12mm Stud @ 90Nm / 66 ft lbf)

Visually check all around the vehicle, and in particular, check that there are no brake fluid, engine oil, Quaife gearbox (refer to maintenance section regarding the oil breather pot) or radiator coolant leaks.

If any leaks are found that are not linked to a screw working loose which can be easily rectified, then please contact the Rage Motorsport customer services.

After the first 45 minutes of use, check the following:

Recheck the torque setting of the wheel nuts
Recheck the vehicle for leaks.

Following the second breaking in check you should now follow the periodic checks as described below.

Enjoy your Rage vehicle and may you have
happy and safe motoring!



Recommended Vehicle Setup

Brake Bias

Spring Damper settings

Tyre Pressure



Recommended Maintenance Programme

Check each day of use

- Tyres, for excessive wear or damage
- Tyre Pressures
 - Off Road: Front 5 psi (suggested) *
 - Rear 10 psi (suggested) *
 - Tarmac: Front 18 psi (suggested) *
 - Rear 20 psi (suggested) *
- Foot Brake
- Handbrake
- Steering
- Wheel Nut Torque
 - (10mm Stud @ 70Nm / 51 ft lbf)
 - (12mm Stud @ 90Nm / 66 ft lbf)
- Ignition Switch
- Fuel Tank for Leaks or Damage
- Engine Oil Level

*Subject to ground conditional

Periodic Checks

Rage recommends operators of their products make a full nut and bolt tightness check and also give the whole machine a general visual appraisal before each day of use.

Check every 10 hrs of use or at least six monthly

- Brake Pads
- Drive Shaft Rubber Gaiters
- Clean Air Filter (more often in dusty cond.)
- Seat Fixings
- Brake Lines
- Wheel Bearings for play
- Gearbox Oil Level (Drain and replace yearly)
- Brake Fluid Level (Drain and replace yearly)

Starting your Rage vehicle



START / STOP
Button

Isolator
Key



The Start Sequence for the Hurricane 'R' (R140RT)

1. If your vehicle is fitted with a ratchet hand brake, it must be "On" in the up position! If not then this feature is not enabled.
2. Insert the Isolator Key and turn it clockwise to the "On" position.
3. Depress the clutch and brake pedal, preventing a false register on "start".
4. Press the Triangle on the remote fob. This initiates the start sequence and the Start / Stop button on the dash pulsates like a heartbeat with a blue light.
5. Now press the Start/Stop button for 5 seconds, you will hear the fuel pump prime first and then the engine will crank and start. During this process as a visual indicator the blue heart beat will pulsate quicker to validate that the "Can-Bus" system is correct and all circuits are functioning correctly.
6. If the engine fails to start then repeat the above sequence to check that the procedure has been followed. If unsuccessful then contact the Rage Motorsport customer support.

To stop the engine simply press the Start / Stop button.



Remote Key Fob & Isolator Key

Useful information to know about your Rage

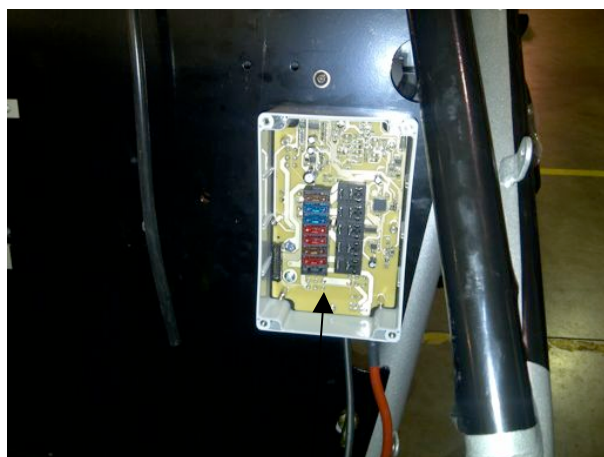
Water sensitive areas



Digi-Dash Unit



"Can Bus" Electrical System
(rear box, located in engine bay)



"Can Bus" Electrical System
(Front, located behind the
Passenger seat)



Engine Inlet manifold HT leads,
and Ignition coils

Whilst it is safe to jet wash your vehicle there are water sensitive areas that will not withstand direct line of fire from a high pressure or jet wash hose. These areas are designed to be "**water resistant**" they are not "**water proof**" and with direct high pressure hoses these items will be damaged and all warranty will be void if lasting damage is sustained. Take all precaution to avoid these areas when cleaning or protect them in advance.

Rage Hurricane & Hurricane 'R' Maintenance

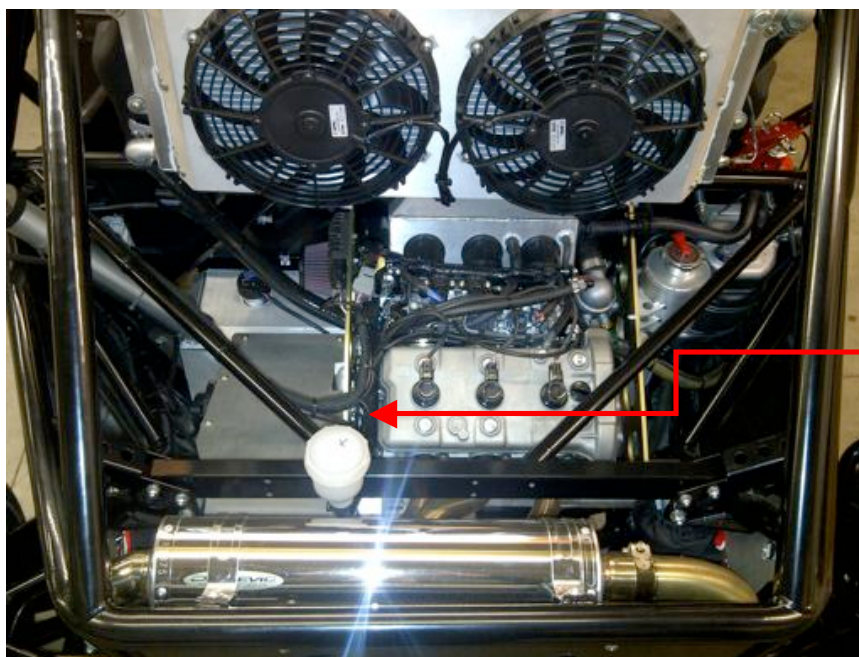
- **Fuel:** 95 Octane Unleaded Petrol (normal unleaded)
- **Engine Oil:** 10w/40 Semi Synthetic
6.9 Litres from empty (Refer to periodic maintenance guide)



Dry Sump Engine gearbox oil
filler point

Engine oil dip stick, level should
check in accordance with the
Yamaha user manual.

- **Gearbox Oil:** 75w/90 Semi Synthetic
Diff/Drop Box – 600ml

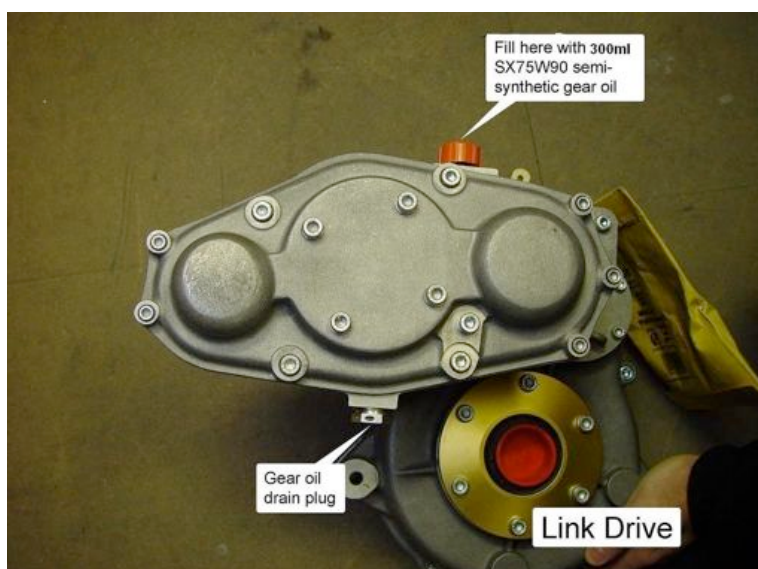
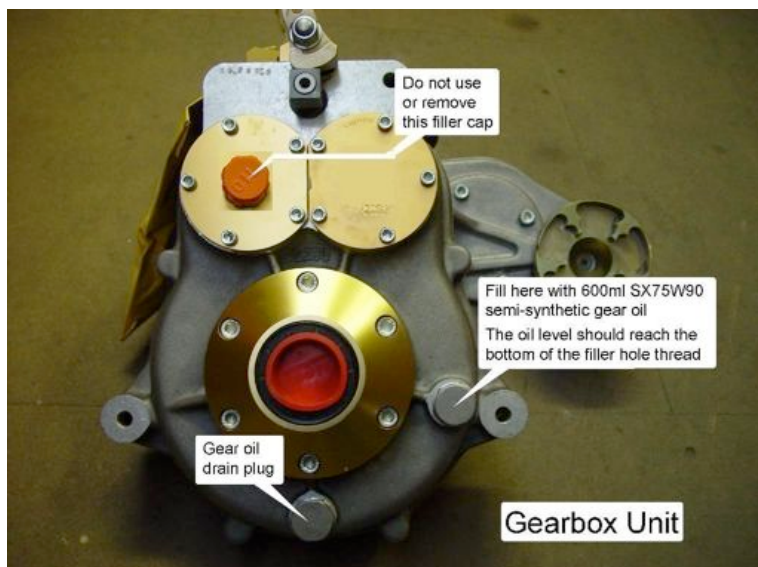


Breather pot / Oil Catch Pot

Important Notice:

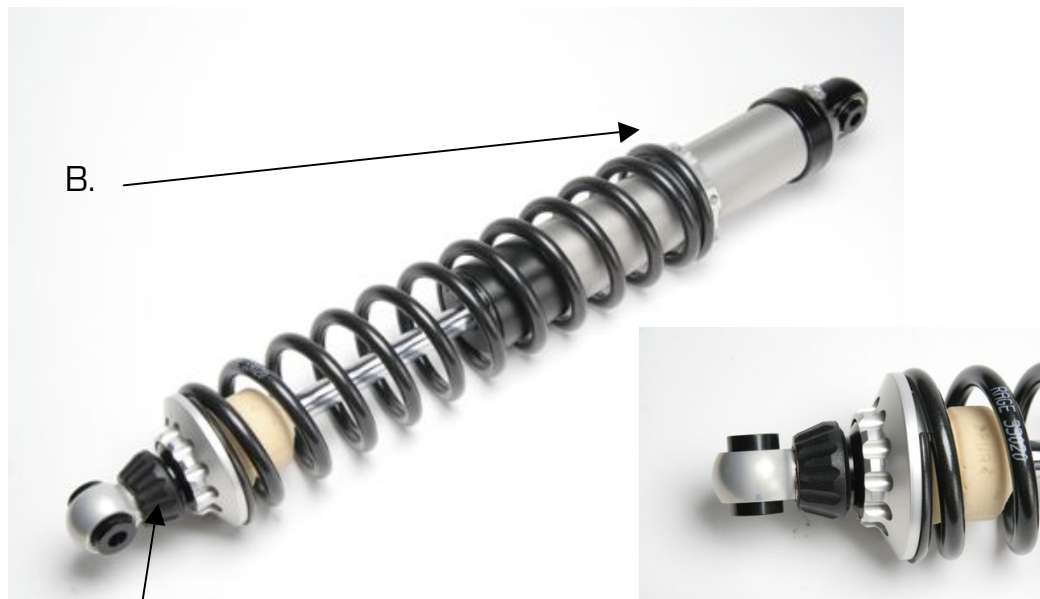
A breather pot is fitted to the Quaife forward/reverse gearbox. When the vehicle is running hot and at high speed it is designed to breathe so you will therefore see oil in the pot. This is normal activity. When the vehicle is not being driven hard or at rest any oil in the pot will drain back into the gear box unit.

The photo below is of a QBA11R gear box normally fitted to a bike engine. The CVT equivalent used on the Hurricane / Hurricane R is a QBA4R and is identical to the QBA11R unit with the exception of the Link drive section, that attaches to the bike.



- **Coolant:** Top up radiator with anti-freeze, mixed 50/50 with water and then replace cap. Once radiator is sealed you can open the top of the expansion bottle and fill to half full and then replace cap.
- **Brake Fluid:** Racing Brake Fluid 5:1

Intrax 2 - Way Adjustable Damper



A. Adjuster knob for both compression and rebound, 50 clicks turn clockwise for more damping.

- Front spring 20
- Rear spring 25

B. Locknut preload, unlock nut when spring preload is adjusted.

1K2 shock absorber

The 1K2 is a real “high-end” shock absorber for demanding street- and competition use. The 1K2 is build using the finest materials. The housing is made from 7075 aluminium. This guarantees low weight, maximum strength and optimum cooling.

The 1K2 damper is always chosen in the largest size possible for the most accurate damping control: normally a 46mm body with a 40mm piston and a 16mm piston rod. Mc. Pherson struts are normally converted from the standard 22mm piston rod to an upside-down system with a 40 or 45mm guidance tube for maximum stiffness and wheel guidance. This is especially important when the G-forces are higher than obtainable with the standard vehicle.

The 1K2 can optionally be equipped with the “Black Titan” coating on the guidance- and piston rod. This is a coating that cannot rust and is extreme hard and smooth. The friction is lowered with these piston rods, improving comfort, reducing oil temperatures, improving traction and extending lifetime under the severest conditions. The “Black Titan” is a luxury, which - if you can afford it - is certainly recommended.



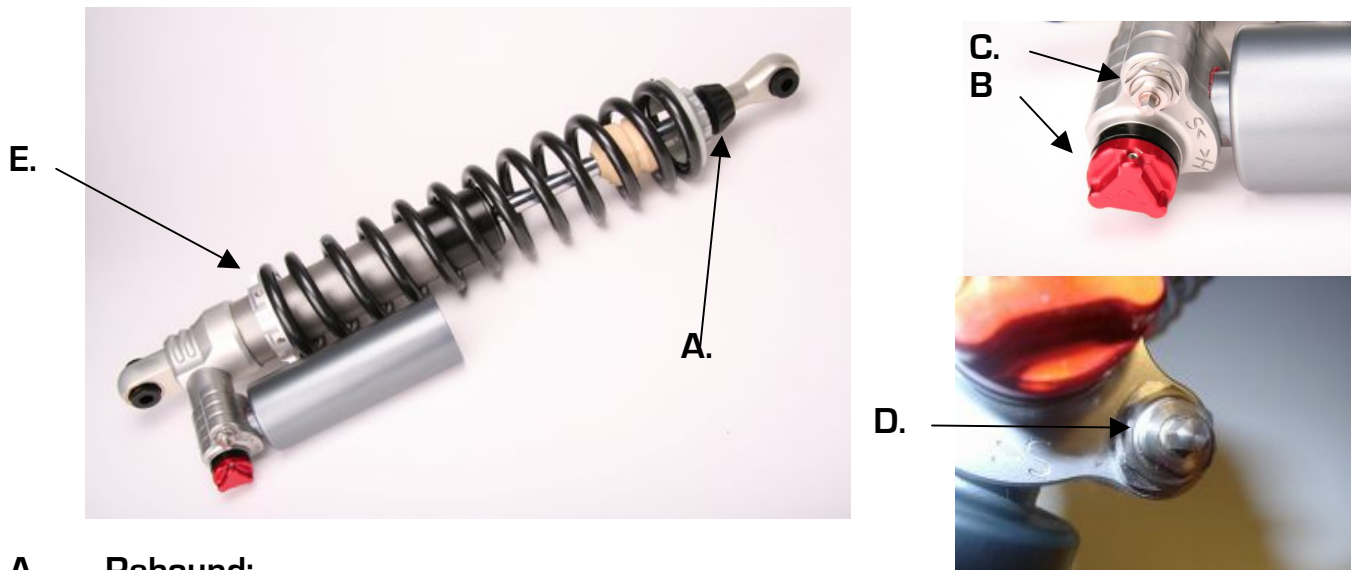
When there is sufficient room available, the 1K2 can be equipped with a “spring rate adjuster” which makes it possible to change the spring constant without removal of the struts/springs. See for more info the category products spring rate adjuster.

Settings

We take suspension serious. Therefore we offer for most applications different settings on the spring rates, shim stacks and damping pistons:

- **Fast street / occasional track day.** An upgrade to the sportive side from the OEM equipment. Daily comfort, vibration and noise levels are just as important as handling.
- **Track day / bumpy race circuit.** A suspension to race on both smooth and bumpy circuits. It is possible to ride to- and from the circuits. Ride height is enough to drive on public roads. Lap times and handling are more important than comfort levels.
- **Full-race / rally.** Stiff suspension, designed to work with slicks and roll cage fitted. Not useable on the street. Lap time optimized.

Intrax 4 - Way Adjustable Damper



A. Rebound:

When the damper is in the buggy, first turn the clicker clockwise to the right, this will close the rebound fully. After this, start opening click by click. We close the rebound first to be sure all dampers are working from the same starting point. When you close the rebound this will make the buggy move (come back) slower to the normal position.

B. High speed compression:

Turn anti clockwise until adjuster stops; this is the softest position, with max. 50 clicks. With high speed compression hardness of the buggy can be controlled in a way you can assist spring rate and make the buggy stiffer.

C. Low speed compression:

By turning clockwise low speed damping will increase (max. 18 clicks). With Low speed the roll in buggy can be controlled and when in softer position (+- 10 clicks) small bumps will be easier taken. (smoother drive)

D. 4th Adjustment

Low speed total damping curve adjustment. By turning the height of the housing from the low-speed adjuster it is possible to change the start and the finish of the total damping curve/force. Now the housing is 2 turns open from fully closed. By opening anti clockwise $\frac{1}{2}$ a turn low-speed curve will be softer over all clicks. If from 2 turns out returning to $1 \frac{1}{2}$ turn, damping force will be higher overall clicks. Undo contra nut with key 14 and turn house with key 9. Always have the adjuster needle fully open when adjusting housing

E: Spring seat undo locknut before turning

4-WAY shock absorber



The 4-way is our top product. The damper is adjustable in the low-speed compression, the high-speed compression, rebound and the overall reach of the low-speed compression; these can all be adjusted separate. The inner works is much more advanced than our other dampers and contains 115 precision engineered parts.

The low-speed compression damping controls the front-rear and left-right movements of the car ("pitch" and "roll"). The high-speed compression controls the movement of the wheels over sharp bumps, like marbles and curb stones.

The rebound damping controls the body movements and absorbs unwanted energies, which otherwise would unsettle the car.

The 4-way can be equipped with spring rate adjusters and the "Black Titan" coating. In special applications, if the physical room allows us, we can fit the "XL" version, upgrading the diameter from 45 to a huge 50 or even 52mm.

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DigiDash² – Lite

Standard Display

- Programmable Speed Display
- Programmable RPM Display
- Diesel Engine Compatible
- Programmable Shift Lights
- Engaged Gear (Calculation Based)
- Coolant Temperature
- Oil Temperature
- Oil Pressure
- Fuel Level
- Engine Hour Counter
- Real time clock on board (Date & Time)
- Acceleration / Deceleration Timers
- Road Legal non-resettable Odometer
- Trip Distance Timer, Counter and Average Speed Calculator
- 5 Key Warning Lights
- 1 Configurable Warning Light
- 6 Programmable Warning Alarms
- MPH / Km/h selectable speed
- Display units in °C/°F/PSI/BAR
- Peak Value Hold on all key parameters
- 10 min Data Record for Analysis
- Adjustable Brightness and Contrast
- 3M Anti-reflective filters



Standard Features Summary

- The DD2-LITE display indicates real time information on all key vehicle parameters and is designed to replace all dashboard instrumentation with one compact, light-weight unit.
- Primarily designed for road and track day use, the DD2-LITE displays the following parameters: speed; rpm; engaged gear; water temperature; oil temperature; oil pressure; battery volts and fuel level.
- In addition, the system also includes: 11 programmable rpm shift lights; 5 key warning lights; 1 one configurable warning light; as well as peak value recall on all parameters; a road legal odometer; a trip distance counter / timer / average speed indicator and a real time clock that shows both time and date. Programmable alarms allow you to pre-set alarm levels and leave the task of monitoring temperatures and pressures to the DigiDash system, enabling you to get on with the job of driving the vehicle.
- **Selection of LCD Screen Displays**
- An example selection of the displays available on the LCD Menu alone are shown below. In normal use these are selected and cycled through using Button A.

Please note that the screens shown below are a selection and not the complete number of screens.....



- Water Temperature, Oil Temperature and Oil Pressure are shown on this screen. You can configure this LCD screen to also display Speed and Engaged Gear if desired (as shown in the above picture).



- The LITE has an Odometer (user selectable for Miles or kilometers), Battery Voltage and Fuel Tank Level (indicated as a % remaining in the fuel tank) as shown on this LCD screen.



- This screen shows RPM, Speed and Engaged Gear. The Gear indicator will show C for Clutch Down, N for Neutral (Bike engines), and 1st, 2nd, 3rd, 4th, 5th and 6th.



- The DD2-LITE will store maximum recorded values for the following parameters: water temp; oil temp; oil pressure; speed; rpm and battery volts.



- These values are stored indefinitely until the user either manually resets them, or configures the DigiDash to reset all max hold values on power-up.
- **The Red LED Display**
 - The centre RED, 3-digit LED display shows the following parameters RPM, Speed, Gear and is the main display for the programmable warning alarms. The alarms will automatically override this display should the monitored values fall outside pre-set limits. The LED display is selected / cycled by pressing button B.
 - **SPEED** (Selectable between MPH OR KM/H)
 - The decimal point (as shown) can be configured to indicate that the unit is recording data (LITE Mini-Log Option and DD2-PRO ONLY). This can be turned on or off as desired.



RPM - The engine revolutions per minute are indicated in 100 rpm increments.



Engaged GEAR - Once you have entered your gearbox ratios and set up the RPM and Speed inputs, the Digidash accurately calculates what gear you are in.



Coolant Temperature Alarm - You can pre-set the temperature above which the Alarm will operate. The DigiDash 2 will monitor the engine coolant temperature and if this rises above your pre-set level, the CTA Alarm will be displayed.



"Hard" Oil Pressure Alarm - The letters O.I.L. will be displayed if the mechanical switch on the oil pressure sensor (either ETB's sensor supplied with the package or the original engine oil pressure switch) is activated. The Alarm trigger point on the ETB sensor is fixed at 7.5psi or 0.5 BAR.





"Soft" Oil Pressure Alarm - The DD2 range have a built-in oil pressure monitoring system. The user can pre-set the oil pressure level below which the OPA Alarm activates. In addition this can be combined with RPM values. OPA is displayed to distinguish it from a mechanical [Hard] activation.



Oil Temperature Alarm - You can pre-set the temperature above which the Alarm will operate. The DigiDash 2 will monitor the engine oil temperature and if this rises above your pre-set level, the OTA Alarm will be displayed.



Fuel Level Alarm - User pre-defined level of fuel remaining in the tank, below which the FLA Alarm will be displayed.

